WE CLAIM:

1. An IR-sensitive composition comprising:

(a) a first polymeric binder which does not comprise acidic groups having a pKa value less than or equal to 8;

(b) a second polymeric binder comprising polyether groups;

(c) an initiator system comprising:

(i) at least one compound capable of absorbing IR radiation selected from triarylamine dyes, thiazolium dyes, indolium dyes, oxazolium dyes, cyanine dyes, polyaniline dyes, polypyrrole dyes, polythiophene dyes and phthalocyanine pigments;

(ii) at least one compound capable of producing radicals selected from polyhaloalkyl-substituted compounds; and

(iii) at least one polycarboxylic acid represented by the following formula I

$$R^4\text{-}(CR^5R^6)_r - Y - CH_2COOH \qquad (I)$$

wherein Y is selected from the group consisting of O, S and $NR^7$,

each of $R^4$, $R^5$ and $R^6$ is independently selected from the group consisting of hydrogen, $C_1$-$C_4$ alkyl, substituted or unsubstituted aryl, -COOH and $NR^8CH_2COOH$,

$R^7$ is selected from the group consisting of hydrogen, $C_1$-$C_6$ alkyl,

$-CH_2CH_2OH$, and $C_1$-$C_5$ alkyl substituted with –COOH,

$R^8$ is selected from the group consisting of $–CH_2COOH$, $-CH_2OH$ and $–(CH_2)_2N(CH_2COOH)_2$ and r is 0, 1, 2 or 3, with the proviso that at least one of $R^4$, $R^5$, $R^6$, $R^7$ and $R^8$ comprises a –COOH group or salts thereof; and

(d) a free radical polymerizable system comprising at least one member selected from unsaturated free radical polymerizable monomers, oligomers which are free radical polymerizable and polymers containing C=C bonds in the back bone and/or in the side chain groups, wherein the following inequality is met:

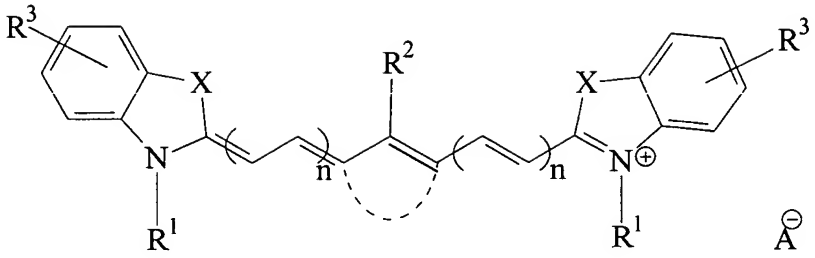
$$ox_i < red_{ii} + 1.6 \text{ eV}$$

with $ox_i$ = oxidation potential of component (i) in eV

$red_{ii}$ = reduction potential of component (ii) in eV.

2. The IR-sensitive composition according to claim 1, wherein the compound capable of absorbing IR-radiation is a cyanine dye.

3. The IR-sensitive composition according to claim 2, wherein the cyanine dye has the formula (A)



(A)

wherein each X is independently S, O, NR or $C(alkyl)_2$; each $R^1$ is independently an alkyl group, an alkylsulfonate or an alkylammonium group; $R^2$ is hydrogen, halogen, SR, $SO_2R$, OR or $NR_2$; each $R^3$ is independently a hydrogen atom, an alkyl group, COOR, OR, SR, $NR_2$, a halogen atom or an optionally substituted benzofused ring; $A^-$ is an anion; the dashed line (---) completes an optional carbocyclic five- or six-membered ring; each R is independently hydrogen, an alkyl or aryl group; and each n is independently 0, 1, 2 or 3.

4. The IR-sensitive composition according to claim 1, wherein the compound capable of absorbing IR-radiation is selected from the group consisting of:

2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclopenten-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium tosylate;

2-[2-[2-phenylsulfonyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium chloride;

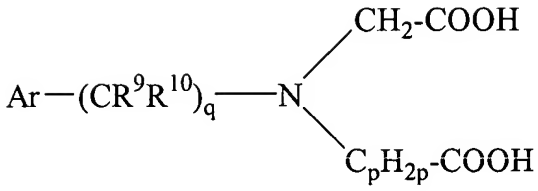
2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium chloride;

2-[2-[2-chloro-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene]-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium tosylate; and

2-[2-[2-chloro-3-[2-ethyl-(3H-benzothiazol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-3-ethyl-benzothiazolium tosylate.

5. The IR-sensitive composition according to claim 1, wherein the compound capable of producing radicals is selected from the group consisting of 2-(4-methoxyphenyl)-4,6-bis(trichloromethyl)-s-triazine, 2-(4-chlorophenyl)-4,6-bis-(trichloromethyl)-s-triazine, 2-phenyl-4,6-bis(trichloromethyl)-s-triazine, 2,4,6-tri-(trichloromethyl)-s-triazine, 2,4,6-tri-(tribromomethyl)-s-triazine, and tribromomethyl phenylsulfone.

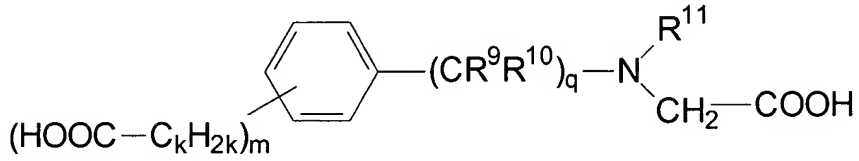
6. The IR-sensitive composition according to claim 1, wherein the polycarboxylic acid is selected from the group consisting of a compound of formula (B)



(B)

wherein Ar is a mono-, poly- or unsubstituted aryl group, p is an integer from 1 to 5, $R^9$ and $R^{10}$ are independently selected from the group consisting of hydrogen and $C_1$-$C_4$ alkyl and q is 0 or an integer from 1 to 3, and a compound of formula (C)

(C)



wherein $R^{11}$ represents a hydrogen atom or a $C_1$-$C_6$ alkyl group, k and m each are an integer from 1 to 5, and $R^9$, $R^{10}$ and q are as defined above.

7. The IR-sensitive composition according to claim 6, wherein the polycarboxylic acid is selected from anilino diacetic acid and N-(carboxymethyl)-N-benzyl-glycine.

8. The IR-sensitive composition according to claim 1, wherein the first polymeric binder comprises side chains comprising at least one group selected from the group consisting of –COOR, –CONHR and $-NR^{12}COOR^{13}$ groups.

9. The IR-sensitive composition according to claim 1, wherein the first polymeric binder comprises a main chain comprising at least one of ester groups and urethane groups.

10. The IR-sensitive composition according to claim 1, wherein the polyether groups of the second polymeric binder are derived from polyoxy alkylenes.

11. The IR-sensitive composition according to claim 13, wherein the polyoxy alkylenes are selected from ethylene oxide and propylene oxide.

12. The IR-sensitive composition according to claim 1, wherein the polyether groups of the second polymeric binder comprise at least one end group selected from the group consisting of –OH, -OR, RCONH-, and $SiR_2OR$ groups.

13. The IR-sensitive composition according to claim 1, further comprising a leuco dye selected from the group consisting of triarylmethanes, thioxanthenes, 9,10-dihydro-acridines and phenoxazines.

14. The IR-sensitive composition according to claim 1, further comprising at least one colorant selected from the group consisting of rhodamine dyes, triarylmethane dyes, anthraquinone pigments, phthalocyanine dyes, and pigments.

15. The IR-sensitive composition according to claim 1, further comprising at least one softening agent.

16. A printing plate precursor comprising:

(A) a substrate;

(B) a negative-working bottom layer applied onto the substrate and comprising an IR-sensitive composition comprising a polymeric binder comprising polyether groups, and

(C) an oxygen-impermeable top layer applied onto the bottom layer,

wherein the printing plate precursor does not comprise an IR laser ablatable layer.

17. The printing plate precursor of Claim 16, wherein the IR-sensitive composition further comprises:

(a) a polymeric binder which does not comprise does not comprise acidic groups having a pKa value less than or equal to 8;

(b) an initiator system comprising:

(i) at least one compound capable of absorbing IR radiation selected from triarylamine dyes, thiazolium dyes, indolium dyes, oxazolium dyes, cyanine dyes, polyaniline dyes, polypyrrole dyes, polythiophene dyes and phthalocyanine pigments;

(ii) at least one compound capable of producing radicals selected from polyhaloalkyl-substituted compounds; and

(iii) at least one polycarboxylic acid represented by the following formula I

$$R^4\text{-}(CR^5R^6)_r - Y - CH_2COOH \qquad (I)$$

wherein Y is selected from the group consisting of O, S and $NR^7$,

each of $R^4$, $R^5$ and $R^6$ is independently selected from the group consisting of hydrogen, $C_1$-$C_4$ alkyl, substituted or unsubstituted aryl, -COOH and $NR^8CH_2COOH$,

$R^7$ is selected from the group consisting of hydrogen, $C_1$-$C_6$ alkyl, $-CH_2CH_2OH$, and $C_1$-$C_5$ alkyl substituted with –COOH,

$R^8$ is selected from the group consisting of $-CH_2COOH$, $-CH_2OH$ and $-(CH_2)_2N(CH_2COOH)_2$ and r is 0, 1, 2 or 3, with the proviso that at least one of $R^4$, $R^5$, $R^6$, $R^7$ and $R^8$ comprises a –COOH group or salts thereof; and

(c) a free radical polymerizable system comprising at least one member selected from unsaturated free radical polymerizable monomers, oligomers which are free radical polymerizable and polymers containing C=C bonds in the back bone and/or in the side chain groups, wherein the following inequality is met:

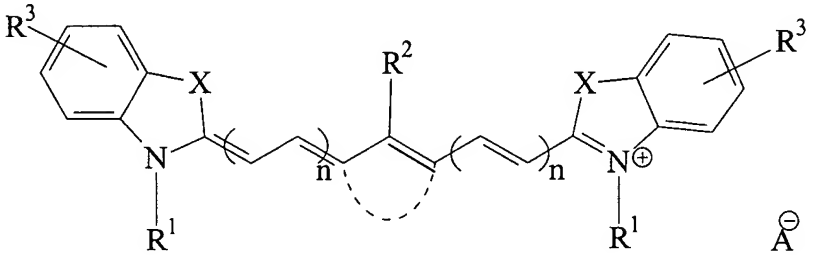
$$ox_i < red_{ii} + 1.6 \text{ eV}$$

with $ox_i$ = oxidation potential of component (i) in eV

$red_{ii}$ = reduction potential of component (ii) in eV.

18. The printing plate precursor according to claim 17, wherein the compound capable of absorbing IR-radiation is a cyanine dye.

19. The printing plate precursor according to claim 18, wherein the cyanine dye has the formula (A)



(A)

wherein each X is independently S, O, NR or $C(alkyl)_2$; each $R^1$ is independently an alkyl group, an alkylsulfonate or an alkylammonium group; $R^2$ is hydrogen, halogen, SR, $SO_2R$, OR or $NR_2$; each $R^3$ is independently a hydrogen atom, an alkyl group, COOR, OR, SR, $NR_2$, a halogen atom or an optionally substituted benzofused ring; $A^-$ is an anion; the dashed line (---) completes an optional carbocyclic five- or six-membered ring; each R is independently hydrogen, an alkyl or aryl group; and each n is independently 0, 1, 2 or 3.

20. The printing plate precursor according to claim 17, wherein the compound capable of absorbing IR-radiation is selected from the group consisting of:

2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclopenten-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium tosylate;

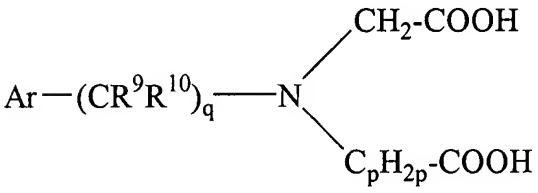
2-[2-[2-phenylsulfonyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium chloride;

2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium chloride;

2-[2-[2-chloro-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene]-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium tosylate; and

2-[2-[2-chloro-3-[2-ethyl-(3H-benzothiazol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-3-ethyl-benzothiazolium tosylate.

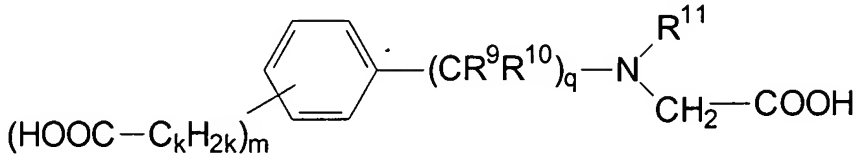
21. The printing plate precursor according to claim 17, wherein the polycarboxylic acid is selected from the group consisting of a compound of formula (B)



(B)

wherein Ar is a mono-, poly- or unsubstituted aryl group, p is an integer from 1 to 5, $R^9$ and $R^{10}$ are independently selected from the group consisting of hydrogen and $C_1$-$C_4$ alkyl and q is 0 or an integer from 1 to 3,

and a compound of formula (C)



(C)

wherein $R^{11}$ represents a hydrogen atom or a $C_1$-$C_6$ alkyl group, k and m each are an integer from 1 to 5, and $R^9$, $R^{10}$ and q are as defined above.

22. The printing plate precursor according to claim 17, wherein the polymeric binder which does not comprise acidic groups having a pKa value less than or equal to 8 comprises side chains comprising at least one group selected from –COOR, –CONHR, and $-NR^{12}COOR^{13}$ groups.

23. The printing plate precursor according to claim 17, wherein the polymeric binder which does not comprise acidic groups having a pKa value less than or equal to 8 comprises a main chain comprising at least one of ester groups and urethane groups.

24. The printing plate precursor according to claim 16, wherein the polyether groups are derived from polyoxy alkylenes.

25. The printing plate precursor according to claim 24, wherein the polyoxy alkylenes are selected from ethylene oxide and propylene oxide.

26. The printing plate precursor according to claim 16, wherein the polyether groups comprise at least one group selected from the group consisting of –OH, -OR, RCONH-, and $SiR_2OR$ groups.

27. The printing plate precursor of claim 16, wherein the oxygen-impermeable layer comprises polyvinyl alcohol.

28. The printing plate precursor of claim 16, wherein the oxygen-impermeable layer comprises one of behenic acid, behenic acid amide, and N,N'-diallyl tartardiamide.

29. The printing plate precursor of claim 17, wherein the IR-sensitive composition further comprises at least one colorant selected from the group consisting of rhodamine dyes, triarylmethane dyes, anthraquinone pigments and phthalocyanine dyes and/or pigments.

30. The printing plate precursor of claim 17, wherein the IR-sensitive composition further comprises at least one softening agent.

31. A method for preparing an on-press developable printing plate, the method comprising:

(A) providing a substrate;

(B) applying a negative-working bottom layer comprising an IR-sensitive composition onto the substrate to obtain a printing plate precursor, wherein the IR-sensitive composition comprises a polymeric binder comprising polyether groups;

(C) applying an oxygen-impermeable top layer onto the bottom layer;

(D) imagewise exposing the printing plate precursor obtained in step (B) to IR-radiation; and

(E) developing on a press, wherein the method does not comprise a separate development step and does not comprise a separate heating step, and the printing plate does not comprise an IR laser ablatable layer.

32. The method of Claim 31, wherein the IR-sensitive composition further comprises

(a) a polymeric binder which does not comprise acidic groups having a pKa less than or equal to 8;

(b) an initiator system comprising

(i) at least one compound capable of absorbing IR radiation selected from triarylamine dyes, thiazolium dyes, indolium dyes, oxazolium

dyes, cyanine dyes, polyaniline dyes, polypyrrole dyes, polythiophene dyes and phthalocyanine pigments;

(ii) at least one compound capable of producing radicals selected from polyhaloalkyl-substituted compounds; and

(iii) at least one polycarboxylic acid represented by the following formula I

$$R^4\text{-}(CR^5R^6)_r - Y - CH_2COOH \qquad (I)$$

wherein Y is selected from the group consisting of O, S and $NR^7$,

each of $R^4$, $R^5$ and $R^6$ is independently selected from the group consisting of hydrogen, $C_1$-$C_4$ alkyl, substituted or unsubstituted aryl, -COOH and $NR^8CH_2COOH$,

$R^7$ is selected from the group consisting of hydrogen, $C_1$-$C_6$ alkyl, $-CH_2CH_2OH$, and $C_1$-$C_5$ alkyl substituted with –COOH,

$R^8$ is selected from the group consisting of $-CH_2COOH$, $-CH_2OH$ and $-(CH_2)_2N(CH_2COOH)_2$ and r is 0, 1, 2 or 3, with the proviso that at least one of $R^4$, $R^5$, $R^6$, $R^7$ and $R^8$ comprises a –COOH group or salts thereof; and

(c) a free radical polymerizable system comprising at least one member selected from unsaturated free radical polymerizable monomers, oligomers

which are free radical polymerizable and polymers containing C=C bonds in the back bone and/or in the side chain groups,

wherein the following inequality is met:

$$ox_i < red_{ii} + 1.6 \text{ eV}$$

with $ox_i$ = oxidation potential of component (i) in eV

$red_{ii}$ = reduction potential of component (ii) in eV.

33. The method of claim 31, wherein the oxygen-impermeable layer comprises polyvinyl alcohol.

34. The method of claim 31, wherein the oxygen-impermeable layer comprises one of behenic acid, behenic acid amide, and N,N'-diallyl tartardiamide.

35. The method of Claim 32, wherein the IR-sensitive composition comprises at least one colorant selected from the group consisting of rhodamine dyes, triarylmethane dyes, anthraquinone pigments and phthalocyanine dyes and/or pigments.

36. The method of Claim 32, wherein the IR-sensitive composition comprises at least one softening agent.